

Results of the Ketamine-ECT Study

Full title: Ketamine augmentation of ECT to improve outcomes in depression

Trial registration: Current Controlled Trials ISRCTN14689382

Why did we carry out the study?

Electroconvulsive therapy (ECT) is the most effective short-term treatment for depression, but there are concerns about it causing memory difficulties. ECT may affect memory through a brain chemical transmitter called glutamate. Studies involving small number of people had suggested that ketamine, an anaesthetic drug that blocks some of glutamate's effects, might prevent the memory problems seen after ECT, as well as speed clinical response. We aimed to test this in a larger group of patients being treated with ECT in the NHS.

What did we do?

We tested whether or not giving a low dose of ketamine with the anaesthetic used for ECT would improve memory compared to a placebo (salt solution) injection, and whether people's depression would get better faster. We also used a new brain imaging technique, functional near-infrared spectroscopy (fNIRS) to measure how well the front part of the brain worked before and during the ECT course. After the study we invited those who had taken part to tell us about their experience in the study through a survey.

How did the study go?

The study was carried out in 7 NHS Trusts and 11 ECT suites in England. Unfortunately, we were only able to include under half the number of people we had originally planned to (70 rather than 160). This was partly because many people having ECT were not suitable for the study, and partly because of other hurdles that cropped up, including problems in the supply of ketamine and the practical difficulties in carrying out a complex study like this over so many sites. Unfortunately, the wrong dose of study drug was occasionally given by mistake, particularly at one site, but this only affected 3 people who received ketamine – they received 10-30% less than they should have - which didn't affect either their safety or the results of the study.

What did we find?

We found that just over half of patients had a good response to ECT and over a third were fully recovered by the end of their treatment course. The majority of patients said that their memory was affected during the course of ECT, although we only found a small effect of ECT on the memory tests we used. We found no differences between the groups who received ketamine or placebo on the tests, and ketamine also didn't make ECT work any faster or better. Ketamine didn't cause any serious side effects, although two people had short-lived vivid dreams or altered sensations. Compared to people who had never been depressed, patients with depression showed less activity in the front of the brain with fNIRS, and ECT further reduced this activity (this was more noticeable in those who benefited from treatment). We did not find any effect of ketamine on brain function. In the survey, people were positive about taking part in the research, with many doing it in the hope of helping others in the future.

What are the implications of the study?

The results do not support using ketamine to improve the outcome of ECT treatment. Although disappointing, it is important to know this, so that people having ECT don't receive a treatment that doesn't help them. The brain imaging results could be important, as this might be a way of guiding treatment in the future. However more research is needed to make sure this is definitely the case, and how it might be used in practice.

Further information

Further information is available on the study website www.KetECT.org. Patients who took part in the study can find out whether they received ketamine or placebo by contacting ian.anderson@manchester.ac.uk

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